UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/908,732	07/20/2001	Jin-Soo Lee	LGE-012	8698

34610　　　7590　　　11/16/2005	EXAMINER
FLESHNER & KIM, LLP	HUNG, YUBIN

	ART UNIT	PAPER NUMBER
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DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/908,732	LEE ET AL.
	Examiner	Art Unit
	Yubin Hung	2625

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *7/29/05 & 9/29/05*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1,2,8-12 and 18-31* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,2,8-12 and 18-31* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *20 July 2001* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☒ All   b) ☐ Some * c) ☐ None of:

       1. ☒ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: Notice of Panel Decision from Pre-Appeal Brief Review.

Response to Amendment/Arguments

1.   This action is in response to the amendment filed July 29, 2005.

2.   Claims 1, 2, 8-12 and 18-31 are still pending.

3.   Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

4.   In view of applicant's response, the objection to the specification has been withdrawn.

5.   Applicant's arguments with respect to claims 1, 2, 8-12 and 18-31 have been considered but are moot in view of the new ground(s) of rejection. See below.

DETAILED ACTION

Specification

6.   The disclosure is objected to because of the following informalities:

*   Claim 21, lines 3-6: per page 10, paragraph 27, "bins" should have been "bits"

    [Note: for examination purpose, "bin" will be interpreted as "bit"]

*   Claim 21, lines 5-6: "where N < M ... threshold" should be on a separate line

    since it qualifies all three limitations of the claim

*   Claims 22 and 31 are objected to under 37 CFR 1.75(c), as being of improper

    dependent form for failing to further limit the subject matter of a previous claim.

    Applicant is required to cancel the claim(s), or amend the claim(s) to place the

    claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

    Specifically, claim 22 is directed to image searching while claim 21 is directed to

    a method of describing color information of images; therefore claim 22 does not

    further limit claim 21. The same reason is also true for claim 31. **[Note: for**

    examination purpose, claims 22 and 31 will be interpreted as independent

    claims.]

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8.   Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, it is not clear which entity the characteristic of "M bins" (interpreted as M bits) in line 3 is attributed to since M could be the maximal number of bits for the image's pixel values or for the bin values of the histogram i.e., the color information of the image). Consequently the claim is rendered vague and indefinite. **[Note: for examination purpose, M will be interpreted as the maximal number of bits for each and every bin values of the histogram.]**

9.   Claims 22 and are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. Specifically, no steps for image searching are recited in the claims.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. ·   Claims 23 and 25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by

Li et al. (US 5,734,893).

12.   Regarding claim 23, Li discloses

- transferring together and sequentially a first bit of each of a
        plurality of bins;
  transferring together and sequentially a second bit of each of the
        plurality of bins; and
  transferring together and sequentially all the bits having the same
        association for each of the plurality of bins until all bits have
        been transferred

  [Fig. 1, refs. 101, 102; Col. 1, lines 42-47 and Col. 5, lines 20-26
  (color histogram as query feature); Col. 3, lines 57- 66; Col. 4, lines
  7-25 (progressive transmission over a network); Col. 8, lines 23-28
  (transmitting most significant bits first). Note that progressive
  transmission starts with the most significant bit of all bin values of
  the color histogram]

13.   Regarding claim 25, and similarly claims 26 and 27, the first bits of the bin values

(the most significant bit is the first bit, per the analysis of claim 23 above) are inherently

associated with the same threshold of 2^{k-1}, where k is the number of bits used to

represent each data (e.g., 8 bits for grey levels from 0 to 255).

14.   Regarding claim 28, 29 and 30, the first bit (of a k-bit data value) [the most

significant bit, per the analysis of claim 23 above] inherently indicates division based on

the first threshold of 2^{k-1}; the second bit indicates division (by 2^{k-2}) of the section of the

value divided by the first bit (i.e., the remaining k-1 bits), and so on and so forth.

Claim Rejections - 35 USC § 103

15.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

16.   Claims 1, 11 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Abdel-Mottaleb et al. (US 6,163,622), in view of Li et al. (US 5,734,893).

17.   Regarding claim 1, and similarly claim 11, Abdel-Mottaleb discloses

- receiving a first sequence of bits and a second sequence of bits
  [Fig. 1, refs. 110-116, 120; Col. 4, lines 9-25. Note that in a
  computer system data are represented as bits]
- each bit of the first sequence and each bit of the second sequence is
  associated with a bin and a threshold
  [Fig. 1, refs. 112, 116. Note that each bit of a value of either
  histogram (112 or 116) that is received is inherently associated with a
  bin and a threshold. (Assuming that each value is represented by k
  bits, with bit k-1 being the most significant, then bit i is associated
  with the threshold of 2^i.)]

Abdel-Mottaleb does not expressly disclose

- wherein in the order of bits of both the first sequence and the second
  sequence, no adjacent bits have the same bin

However, per the analysis of claim 23, Li discloses a server [Fig. 1, ref. 103] receiving

progressively transmitted bits of a color histogram. Being progressive, the histogram is

received bit plane by bit plane, starting with the most significant bit plane. Therefore, no

adjacent bits have the same bin.

Abdel-Mottaleb and Li are combinable because they both have aspects that are from

the same field of endeavor of data retrieval.

At the time of the invention, it would have been obvious to one of ordinary skill in the art

to modify Abdel-Mottaleb with the teaching of Li by progressively transmitting data, most

significant bits first. The motivation would have been to minimize the lapse time

between initiating a query and obtaining the result [Li: Col. 4, lines 20-25].

18.   Regarding claim 31, the combined invention of Abdel-Mottaleb and Li further

discloses

- searching images transferred using the method of claim 23
  [Li: Fig. 1: Col. 3, lines 57-67. Also per the analysis of claim 23,
  since Li anticipates claim 23]

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19.   Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Abdel-Mottaleb et al. (US 6,163,622) and Li et al. (US 5,734,893) as applied to claims 1,

11 and 31 above, and further in view of Macisaac (GB 2,281,136A).

20.   Regarding claim 2, and similarly claim 12, the combined invention of Abdel-

Mottaleb and Li discloses all limitations of its parent, claim 1.

The combined invention of Abdel-Mottaleb and Li does not expressly disclose

- comparing a bit of the first sequence with a bit of the second sequence
  if the bit of the first sequence and the bit of the second sequence are
  associated with the same bin and same threshold

However, Macisaac discloses bit-by-bit comparison of two incoming bit streams [Fig. 1,

refs. 12-16; P. 1, line 37-P. 2, line 4]. In addition, **Official Notice** is taken that since the

combined invention of Abdel-Mottaleb and Li is directed to image retrieval by

determining the similarity of feature data (histograms in this case) [Abdel-Mottaleb: Fig.

1, refs. 112, 116, 120, 122], it would have been obvious to one of ordinary skill in the art

at the time of the invention to compare bits only if they are associated with the same bin

and the same threshold (i.e., bit i of the value of bin k from the histogram 112 with bit i

of the value of bin k from histogram 116) because otherwise the comparison will not be

meaningful.

The combined invention of Abdel-Mottaleb and Li is combinable with Macisaac because

they both have aspects that are from the same field of endeavor of data transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Abdel-Mottaleb and Li with the teaching of Macisaac by comparing a bit of the first sequence with a bit of the second sequence if the bit of the first sequence and the bit of the second sequence are associated with the same bin and same threshold. The motivation would have been to decrease the latency time (since comparison can start when the first bit pair is received) and also to make the comparison meaningful (since, obviously, if the most significant bit from the first histogram is compared with the next significant bit of the second histogram, then even if their corresponding bins have the same value, the comparison result may not reflect that).

Therefore, it would have been obvious to combine Macisaac with Abdel-Mottaleb and Li to obtain the invention as specified in claim 2.

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21.   Claims 8-10 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Mottaleb et al. (US 6,163,622) and Li et al. (US 5,734,893), as applied to claims 1, 11 and 31 above, and further in view of Cheung et al. ("Progressive Image Transmission by Linear Quadtree Coding and Wavelet Transformation," *13th Int'l Conf. On Digital Signal Processing, V. 2*, 1997, pp. 475-478).

22.   Regarding claim 8, and similarly claim 18, the combined invention of Abdel-

Mottaleb and Li discloses everything.

The combined invention of Abdel-Mottaleb and Li does not expressly disclose

- in the order of bits of both the first sequence and the second
  sequence, bits associated with the same threshold are grouped together
  in groups

However, Cheung teaches/suggests grouping bits (in the order or their respective

sequences) associated with the same threshold together. [See Fig. 2.2; P. 475,

Sections 2.2-2.3; P. 476, Sect. 3.3, 3rd paragraph, lines 5-7. Note that the coefficients

correspond to the magnitudes and the levels the nodes reside correspond to the values.

Clearly sorting in this manner will group values of the same associated magnitude

together]

The combined invention of Abdel-Mottaleb and Li is combinable with Cheung because

they are from the same field of endeavor of image compression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art

to modify the combined invention of Abdel-Mottaleb and Li with the teaching of Cheung

by grouping values with the same associated coefficient (i.e., magnitude). The

motivation would have been to order information by importance, as stated in Cheung [P.

476, Sect. 3.3, 3rd paragraph, lines 5-7].

Therefore, it would have been obvious to combine Cheung with Abdel-Mottaleb and Li

to obtain the invention specified in claim 8.

23.   Regarding claim 9, and similarly claim 19, Cheung further teaches

- the order of the groups is according to resolution of information of
  each bit of each group
  [Per the analysis of claim 8; P. 476, Sect. 3.3, 3rd paragraph, lines 5-
  7. Note that the value of a coefficient reflects its information
  content, i.e., the "resolution" of information]

24.   Regarding claim 10, and similarly claim 20, Cheung further teaches

- in the order of bits of both the first sequence of bits and the second
  sequence of bits, each bit is associated with a resolution equal to or
  higher than the preceding bit's
  [Fig. 2.2; P. 475, Sections 2.2-2.3; P. 476, Sect. 3.3, 3rd paragraph,
  lines 5-7. Note that the value of a coefficient reflects its
  information content, i.e., the "resolution" of information. Note
  further that the well-known technique of sorting data (coefficient in
  this case) into an increasing order will result in each value being
  associated with a resolution equal to or higher than the preceding
  value's]

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25.   Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Wittenstein et al. (US 6,026,180), in view of Topiwala et al. (US 6,771,829).

26.   Regarding claim 21 (as interpreted), Wittenstein discloses

- describing the image using the *compressed* color information (where N <
  M), and wherein N number of bits and M number of bits share at least one
  common threshold)
  [Abstract, lines 10-12; Fig. 4, ref. 411; Col. 7, lines 5-21. Note
  that a color histogram of an image is a statistical description of that
  image's color information. Note that since the compression
  (quantization) is obtained by dropping least significant bits (per
  Topiwala; see below), the, say, most significant, bit of a quantized
  value still has the same significance as the MSB of the original value

which, in this case, is associated with a threshold of 2^{M-1}. Since at least the MSB remains after truncation, at least one common threshold, 2^{M-1}, is shared]

Wittenstein does not expressly disclose that the compressed color histogram (i.e., color information) is obtained by quantization in the following manner

- selecting a number N of bits as a subset of M bits; and quantizing color information using the N number of bits [Fig. 1A; Col. 3, lines 30-33.]

However, Topiwala discloses compression by quantization. [Fig. 1A; Col. 3, lines 30-33. Note that truncating least significant bits is a form of quantization.]

Wittenstein is combinable with Topiwala because they have aspects that are from the same field of endeavor of data compression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Wittenstein with the teaching of Topiwala by using truncation (a form of quantization) to obtain the compress histogram. The motivation would have been because truncation is easy to implement and involves very little computation cost and also because the most significant information is preserved.

Therefore, it would have been obvious to combine Topiwala with Wittenstein to obtain the invention as specified in claim 21.

***

27.   Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Mottaleb et al. (US 6,163,622), in view of Wittenstein et al. (US 6,026,180) and Topiwala et al. (US 6,771,829).

28.   Regarding claim 22, Abdel-Mottaleb discloses an image searching method using histograms [Fig. 1]. In addition, the combined invention of Wittenstein and Topiwala discloses an image description (i.e., compressed color histogram) as recited in claim 21.

Abdel-Mattaleb is combinable with the combined invention of Topiwala and Wittenstein because they have aspects that are from the same field of endeavor of histogram processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Abdel-Mattaleb with the teaching of the combined invention of Topiwala and Wittenstein by performing search on the described images. The motivation would have been to lower the search cost since the query (i.e., compressed histogram or quantized color information) is smaller in size as would have been obvious to one of ordinary skill in the art.

Therefore, it would have been obvious to combine Topiwala and Wittenstein with Abdel-Mottaleb to obtain the invention as specified in claim 22.

***

29.   Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al.

(US 5,734,893), as applied to claims 23 and 25-30 above, and further in view of

Fukushima (US 5,724,457).

30.   Regarding claim 24, Li discloses all limitations of its parent, claim 23.

Li does not expressly disclose

* in the event that the transfer is interrupted before completion, a query
  can be executed on the transferred portion

However, Fukushima teaches/suggests matching using only partial matching using the

prefix (i.e., front portion) of an input (i.e., query) string.   [Fig. 1, ref. 60; Col. 6, lines 10-

22. Note the bits transferred prior to the interruption constitute the prefix of the entire

set of bits that were to be transferred.]

Li is combinable with Fukushima because they have aspects that are from the same

field of endeavor of image transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art

to modify the combined invention of Li with the teaching of Fukushima by performing

query using the data received prior to transmission interruption. The motivation would

have been because matching based on prefixes frequently still can provide a

manageable set of candidates that can include the intended query results.

Therefore, it would have been obvious to combine Fukushima with Li to obtain the

invention specified in claim 24.

Contact Information

31.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Yubin Hung whose telephone number is (571) 272-

7451. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Yubin Hung   BHAVESH M. MEHTA
Patent Examiner   SUPERVISORY PATENT EXAMINER
November 3, 2005   TECHNOLOGY CENTER 2600

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
IIIIIIIIIIIIIIIIIIIIIIIIIIIIII	09/908,732	LEE ET AL.	
	Yubin Hung	**Art Unit** 2625	
Document Code - AP.PRE.DEC			

Notice of Panel Decision from Pre-Appeal Brief Review

IIIIIIIIIIIIIIIIII

This is in response to the Pre-Appeal Brief Request for Review filed <u>9/29/05</u>.

1. ☐ **Improper Request** – The Request is improper and a conference will not be held for the following reason(s):

    ☐ The Notice of Appeal has not been filed concurrent with the Pre-Appeal Brief Request.
    ☐ The request does not include reasons why a review is appropriate.
    ☐ A proposed amendment is included with the Pre-Appeal Brief request.
    ☐ Other:

The time period for filing a response continues to run from the receipt date of the Notice of Appeal or from the mail date of the last Office communication, if no Notice of Appeal has been received.

2. ☐ **Proceed to Board of Patent Appeals and Interferences** – A Pre-Appeal Brief conference has been held. The application remains under appeal because there is at least one actual issue for appeal. Applicant is required to submit an appeal brief in accordance with 37 CFR 41.37. The time period for filing an appeal brief will be reset to be one month from mailing this decision, or the balance of the two-month time period running from the receipt of the notice of appeal, whichever is greater. Further, the time period for filing of the appeal brief is extendible under 37 CFR 1.136 based upon the mail date of this decision or the receipt date of the notice of appeal, as applicable.

    ☒ The panel has determined the status of the claim(s) is as follows:
Claim(s) allowed: _____.
Claim(s) objected to: _____.
Claim(s) rejected: *1, 2, 8-12, 18-31*
Claim(s) withdrawn from consideration: _____.

3. ☐ **Allowable application** – A conference has been held. The rejection is withdrawn and a Notice of Allowance will be mailed. Prosecution on the merits remains closed. No further action is required by applicant at this time.

4. ☒ **Reopen Prosecution** – A conference has been held. The rejection is withdrawn and a new Office action will be mailed. No further action is required by applicant at this time.

All participants:

(1) *Bhavesh M. Mehta*.   (3)_____.

(2) *Yubin Hung*.   (4)_____.

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
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